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Instructions for use

# Some Water Mites from Kyushu<sup>1)</sup>

by

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(With 11 Text-figures)

Concerning water mites from Kyushu, so far as the author is aware, there have been published four papers, of which two by Prof. Tohru Uchida (1931, 1937) describing fourteen species, one by Dr. Tohru Uchida and Dr. I. Miyazaki (1935) and another by Dr. I. Miyazaki (1935) describing on the life-history of *Arrenurus madaraszi* on *Anopheles*. This report is mainly based on the specimens collected by the author in north Kyushu in October, 1938 to June, 1939, and preserved in the collections of Prof. T. Uchida, and partly on the specimens captured by Dr. I. Miyazaki in middle Kyushu in September, 1935 and also deposited in Uchida's collection. In these collections are included the following cosmopolitan species: *Hydrodroma despiciens* and *Unionicola crassipes*, and *Hydrachna uniscutata* which is widely distributed in the Palaearctic region and divided into several varieties. As the species endemic to Japan, are enumerated the three species: *Eylais takingyo*, *Arrenurus japonicus* n. sp. and *Arrenurus* (*Uchidacarus*) *sagaensis* n. subgen. et n. sp. As Indo-Malayan species can be counted the following species, *Limnesia buruensis* and *Arrenurus latipetiolatus*, while *Arrenurus soochowensis* seems to widely distribute in the Palaearctic region except European and Mediterranean sub-regions.

Before proceeding further, the writer should like to express his cordial thanks to Prof. Tohru Uchida for his kind guidance in the course of this research and for giving the specimens from his custody at the writer's disposal. He is also indebted to Prof. I. Miyazaki, who collected a part of the collection in this research. The following eleven species were considered.

- 1) *Hydrachna* (*Schizo*.) *uniscutata* var. *yatsushiro* Uchida.
- 2) *Hydrachna* (*Schizo*.) *uniscutata* var. *lila* Uchida.

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- 3) *Eylais takingyo* Masuda
- 4) *Hydrodroma despicieus* (O. F. Müll.)
- 5) *Limnesia buruensis* Viets
- 6) *Limnesia tuberifera* Sokolow
- 7) *Unionicola* (*Hexatux*) *crassipes* (O. F. Müll.)
- 8) *Arrenurus* (*Arrenurus*) *japonicus* Uchida & Imamura n. sp.
- 9) *Arrenurus* (*Arrenurus*) *latipetiolatus* Piersig
- 10) *Arrenueus* (*Uchidacarus*) *sagaensis* n. subgen. et n. sp.
- 11) *Arrenurus* (*Micruracarus*) *soochowensis* Marshall

### 1. *Hydrachna* (*Schizo*.) *uniscutata* var. *yatsushiro* Uchida (Fig. 1)

*Male*. Body round in contour, measuring 2.3 mm long and 2 mm wide. Skin soft, colourless and covered with small papillae. Interval between eyes  $517\mu$ . Antero-dorsal plate  $885\mu$  long and  $750\mu$  wide. Frontal organ on the plate large, having no figures in it. Mandibles spine-like, slender in shape, measuring  $975\mu$  long. Palpus moderately thick, having in the second segment five short spines: one on the lateral side and the other four on the extensor side. The palpal segments being in Table 1 (in  $\mu$ ).

Table 1.

| Segments      | I   | II  | III | IV  | V  |
|---------------|-----|-----|-----|-----|----|
| Extensor side | 211 | 204 | 238 | 102 | 48 |
| Flexor side   | 163 | 106 | 217 | 75  | 47 |

The pedal segments being in Table 2 (in  $\mu$ ).

Table 2.

| Legs | 1   | 2   | 3   | 4   | 5   | 6   |
|------|-----|-----|-----|-----|-----|-----|
| I    | 102 | 238 | 156 | 190 | 230 | 230 |
| II   | 163 | 313 | 204 | 313 | 380 | 326 |
| III  | 150 | 245 | 177 | 360 | 374 | 286 |
| IV   | 278 | 313 | 285 | 503 | 503 | 333 |

Genital plate almost heart-like in shape, measuring  $480\mu$  long and  $420\mu$  wide. Penis scaffold  $320\mu$  wide and  $272\mu$  long. Body colour vermilion red.

*Female* (Fig. 1, e, f). The body and organs are same as those of the male, though different in the genital area and body size. The measurements of the

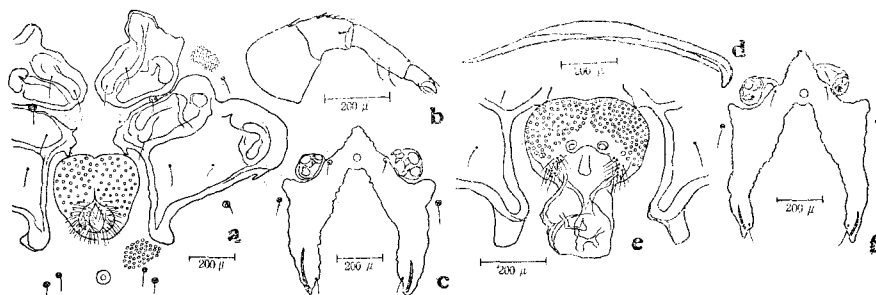


Fig. 1. *Hydrachna* (*Schizo*) *uniscutata* var. *yatsushiro* Uchida

a. Epimera and genital plate of male. b. Left palpus of male. c. Eyes and antero-dorsal plate of male. d. Mandible of male. e. Genital area of female. f. Eyes and antero-dorsal plate of female.

body and organs are as follows. Body 3.8 mm long and 3.2 mm wide. Antero-dorsal plate  $990\mu$  long and  $705\mu$  wide. Interval between eyes  $450\mu$ . Eye capsule  $154 \times 102\mu$  in diameters. Maxillar organ  $780\mu$  long. Mandibles  $1080\mu$  in length. The palpal segments being in Table 3 (in  $\mu$ ).

Table 3.

| Segments      | I   | II  | III | IV  | V  |
|---------------|-----|-----|-----|-----|----|
| Extensor side | 286 | 204 | 252 | 109 | 48 |
| Flexor side   | 197 | 136 | 204 | 61  | 45 |

Genital plate  $422\mu$  in width.

*Localities.* One male and female were captured by the author on June 4, 1939 in a pond at Furueda-mura, Saga Prefecture and one male and female were caught on June 5, 1939 in a rice nursery at Kashima-cho, Saga Prefecture.

*Remarks.* The species is first recorded as a new variety in 1937 by Prof. Tohru Uchida on the specimens captured by Dr. I. Miyazaki from Yatsushiro, Kumamoto Prefecture.

## 2. *Hydrachna* (*Schizo*) *uniscutata* var. *lila* Uchida (Fig. 2)

*Female.* Body globular in shape, 2.2 mm long and 1.8 mm wide. Frontal organ on the antero-dorsal plate colourless, indicating granulated figures in it. Measurements of organs are as follows. Antero-dorsal plate  $750\mu$  long and  $645\mu$  wide. Interval between eyes  $450\mu$ . Maxillar organ  $900\mu$  long and  $450\mu$  wide. Mandibles  $1050\mu$  long. The palpal segments being in Table 4 (in  $\mu$ ).

Table 4.

| Segments      | I   | II  | III | IV  | V  |
|---------------|-----|-----|-----|-----|----|
| Extensor side | 204 | 231 | 279 | 102 | 53 |
| Flexor side   | 182 | 175 | 227 | 58  | 52 |

The pedal segments being in Table 5 (in  $\mu$ ).

Table. 5

| Segments<br>Legs | 1   | 2   | 3   | 4   | 5   | 6   |
|------------------|-----|-----|-----|-----|-----|-----|
| I                | 150 | 238 | 150 | 184 | 224 | 224 |
| II               | 156 | 272 | 184 | 313 | 367 | —   |
| III              | 184 | 286 | 211 | 435 | 430 | 320 |
| IV               | 320 | 340 | 286 | 564 | —   | —   |

Genital plate  $388\mu$  wide and  $231\mu$  long. Body colour red.

*Male.* Antero-dorsal plate rather stocky than that of the female. Genital plate roughly round in shape,  $360\mu$  long and  $353\mu$  wide. Measurements of the body and organs are as follows. Body 1.8 mm long and 1.6 mm wide. Antero-dorsal plate  $600\mu$  long and  $555\mu$  wide. Interval between eyes  $420\mu$ . Eye capsule  $136 \times 102\mu$  in diameters. Maxillar organ  $690\mu$  long. Mandibles  $930\mu$  in length. The palpal segments being in Table 6 (in  $\mu$ ).

Table 6.

| Segments      | I   | II  | III | IV | V  |
|---------------|-----|-----|-----|----|----|
| Extensor side | 143 | 190 | 224 | 95 | 37 |
| Flexor side   | 136 | 143 | 184 | 41 | 37 |

The pedal segments being in Table 7 (in  $\mu$ ).

Table 7.

| Segments<br>Legs | 1   | 2   | 3   | 4   | 5   | 6   |
|------------------|-----|-----|-----|-----|-----|-----|
| I                | 120 | 218 | 129 | 163 | 184 | 204 |
| II               | 129 | 252 | 143 | 158 | —   | —   |
| III              | 142 | 232 | 165 | 360 | 360 | 265 |
| IV               | 170 | 238 | 231 | 360 | 394 | 252 |

Penis scaffold  $218\mu$  long and  $258\mu$  wide.

*Localities.* Three males and one female were obtained by the author on June 4, 1939 in a pond at Furueda-mura, Saga Prefecture and one female on June 5, 1939 in a rice nursery at Kashima-cho, Saga Prefecture.

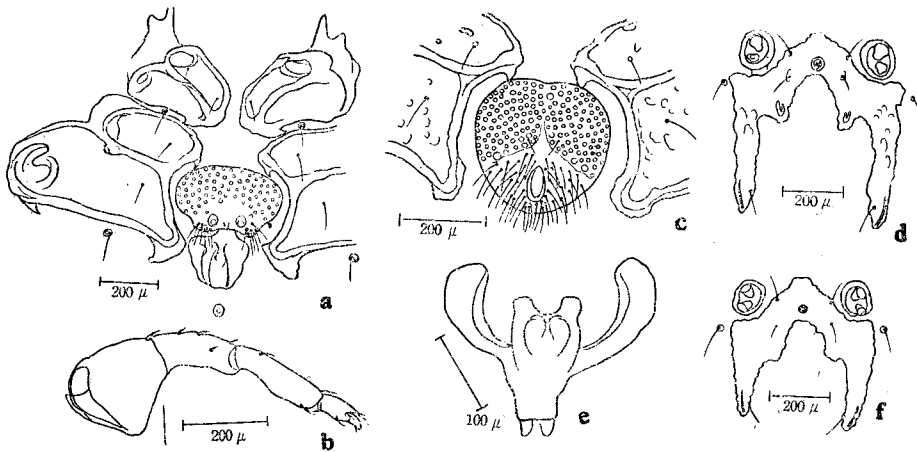


Fig. 2. *Hydrachna* (Schizo.) *uniscutata* var. *lita* Uchida.

a. Epimera and genital plate of female. b. Left palpus of female. c. Genital area of male. d. Eyes and antero-dorsal plate of female. e. Penis scaffold of male. f. Eyes and antero-dorsal plate of male.

*Remarks.* The species was described in 1937 as a new variety by Dr. Tohru Uchida on the specimens collected by Dr. I. Miyazaki from Yatsushiro, Kumamoto Prefecture. The present species is easily distinguished from the previous species by the following characters: the frontal organ indicating granulated appearances in it, the palpi more slender in shape and smaller body size than in the previous species.

### 3. *Eylais takingyo* Masuda (Fig. 3)

Body oval in shape, 2.2 mm long and 1.8 mm wide. Skin very soft, colourless, transparent, covering all body surface with fine striated figure. Ocular capsules  $170\mu$  long and  $120\mu$  wide, being connected each other with an intercapsular bridge of  $60\mu$  long. Ocular bridge widened in the middle part. Maxillar organ  $540\mu$  long and  $320\mu$  wide. Palpi provided with several feathered spines in the second and fourth segments, mostly near the terminal ends. The third segments bear many spines, mostly non-feathered, but two of them feathered. The palpal segments being in Table 8 (in  $\mu$ ).

Table 8.

| Segments      | I  | II  | III | IV  | V   |
|---------------|----|-----|-----|-----|-----|
| Extensor side | 95 | 150 | 136 | 265 | 150 |
| Flexor side   | 54 | 14  | 41  | 231 | 150 |

Epimera colourless and transparent, indicating fine meshed appearance. The first and second legs are provided densely with many spines in the terminal ends of the sixth segments, but the third and fourth legs have less spines in the terminal ends of the sixth segments. The pedal segments being in Table 9 (in  $\mu$ ).

Table 9.

| Segments | 1   | 2   | 3   | 4   | 5   | 6   |
|----------|-----|-----|-----|-----|-----|-----|
| Legs     |     |     |     |     |     |     |
| I        | 54  | 170 | 211 | 221 | 265 | 258 |
| II       | 75  | 204 | 238 | 265 | 213 | 286 |
| III      | 90  | 252 | 306 | 320 | 260 | 306 |
| IV       | 170 | 258 | 381 | 401 | 442 | 388 |

Body colour red.

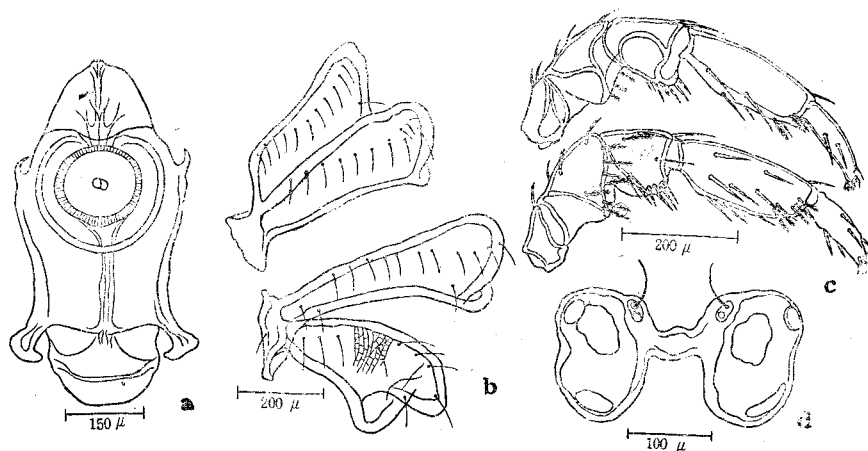


Fig. 3. *Eylais takingyo* Masuda.

a. Maxillar organ. b. Left epimera. c. Palpi (top, the right one; bottom, the left one). d. Ocular plates.

*Localities* : The species is common in rice fields of Kansai region according to Y. Masuda. Five specimens were captured by the author on June 5, 1939 in a rice nursery at Kashima-cho, Saga Prefecture.

*Remarks*. The author identified the species with *Eylais* sp. described by Y. Masuda on 1935 as a new species and scheduled to be named by him as *Eylais takingyo*. *Eylais* sp. described by Prof. T. Uchida in 1937 from Yatsushiro seems also the same species here referred.

#### 4. *Hydrodroma despiciens* (O. F. Müll.) (Fig. 4)

*Male*. Body globular in shape,  $1190\mu$  long and  $970\mu$  wide. Interval between eyes  $560\mu$  in the anterior pair. Maxillar organ  $220\mu$  long and  $155\mu$  wide. Mandibles  $308\mu$  long and  $74\mu$  high. Palpus has six hairs, five of which are feathered, in the second segment, and two slender hairs in the third segment. The palpal segments being in Table 10 (in  $\mu$ ).

Table 10.

| Segments      | I  | II | III | IV  | V  |
|---------------|----|----|-----|-----|----|
| Extensor side | 50 | 82 | 53  | 200 | 82 |
| Flexor side   | 63 | 40 | 30  | 82  | 80 |

The pedal segments being in Table 11 (in  $\mu$ ).

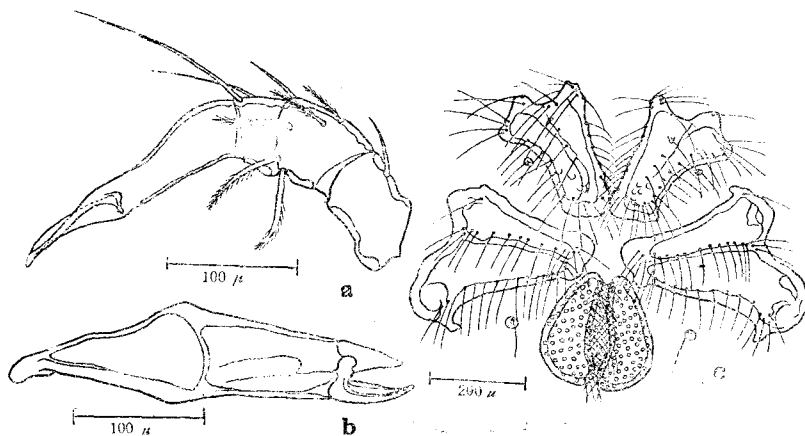


Fig. 4. *Hydrodroma despiciens* (Müll.).

a. Right palpus of male. b. Mandible of male. c. Epimera and genital plates of male.

Table 11.

| Legs | Segments | 1   | 2   | 3   | 4   | 5   | 6   |
|------|----------|-----|-----|-----|-----|-----|-----|
|      |          |     |     |     |     |     |     |
| I    |          | 57  | 88  | 106 | 189 | 242 | 216 |
| II   |          | 88  | 110 | 141 | 273 | 312 | 255 |
| III  |          | 70  | 106 | 128 | 233 | 282 | 242 |
| IV   |          | 106 | 154 | 194 | 312 | 330 | 282 |

Genital opening 250  $\mu$  in length. Body colour red.

*Locality.* Three males were captured by the author on Oct. 23, 1938 in a pond at Kimuro-mura, Fukuoka Prefecture. The cosmopolitan species seems to be found everywhere in Japan.

### 5. *Limnesia buruensis* Viets (Fig. 5)

*Female.* Body oval in shape, 1240 $\mu$  long and 1080 $\mu$  wide. Skin soft, colourless, having no figures. Maxillar organ 279 $\mu$  long and 150 $\mu$  wide. Mandibles slender and the membranous appendages indicate alveolar figures. Palpi rather stout. The second segment of palpus is provided with five feathered spines and two non-feathered spines on the extensor surface, and on the flexor side a spine which has no stool. The third segment bears three long hairs near the extensor edge. The terminal dividings of the fifth segments can be scarcely seen. The palpal segments being in Table 12 (in  $\mu$ ).

Table 12.

| Segments      | I  | II  | III | IV  | V  |
|---------------|----|-----|-----|-----|----|
| Extensor side | 14 | 129 | 102 | 197 | 41 |
| Flexor side   | 41 | 95  | 41  | 156 | 47 |

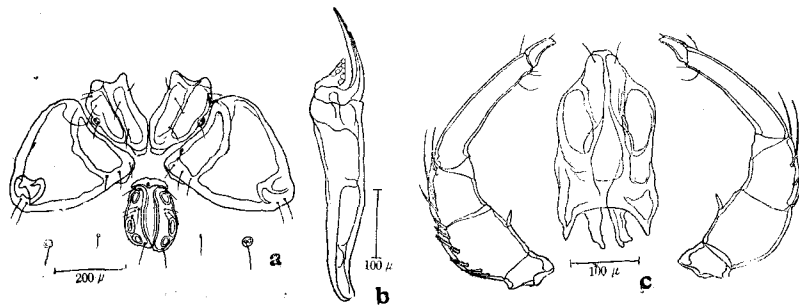
The epimera are brown in colour, indicating granulated appearance. Anterior groups of epimera are divided each other in right and left sides. The urpores are included in the second epimera near the postero-lateral margins. Fourth epimera very large. The bordering lines between the third and fourth epimera lean to the inner sides. The pedal segments being in Table 13 (in  $\mu$ ).

Terminal spines of the fourth legs 61 $\mu$  in length. Genital plate 204 $\mu$  long and 64 $\mu$  wide. Genital suspender rather small measuring 122 $\mu$  in length. No dorsal plate.

*Localities.* Only one female was captured by the author on June 4, 1939 in a pool at Furueda-mura, Saga Prefecture. The species was reported by Prof. Tohru Uchida in 1931 from Taihoku and in 1939 from Osaka.

Table 13.

| Segments | 1   | 2   | 3   | 4   | 5   | 6   |
|----------|-----|-----|-----|-----|-----|-----|
| Legs     |     |     |     |     |     |     |
| I        | 68  | 75  | 88  | 116 | 143 | 156 |
| II       | 75  | 88  | 106 | 150 | 184 | 197 |
| III      | 108 | 88  | 95  | 177 | 204 | 184 |
| IV       | 123 | 122 | 150 | 224 | 252 | 252 |

Fig. 5. *Limnesia buruensis* Viets.

a. Epimera and genital area of female. b. Mandible of female. c. Mouth parts of female: left and right, palpi; middle, maxillar organ.

*Distribution.* Molucca and Formosa.

#### 6. *Limnesia tuberifera* Sokolow (Fig. 6)

*Male.* Body oval in shape,  $600\mu$  long and  $490\mu$  wide. Skin soft, colourless and transparent, having neither striation nor papillous figure. The postero-dorsal plate  $57\mu$  in length and  $46\mu$  wide, indicating small papillae mostly on its lateral sides. Eyes double in pair, measuring  $175\mu$  in interval between them in the anterior pair. Maxillar organ  $177\mu$  long and  $108\mu$  wide. Mandibles rather high in shape, measuring  $220\mu$  long and  $61\mu$  high. Palpi stout. The second segments of palpi are thick and provided with four spines on the extensor margins. The third segment has four spines, one of which is feathered. The fourth segment is rather stout and short, having remarkable papillae on the flexor side. The palpal segments being in Table 14 (in  $\mu$ ).

The anterior epimeral groups are connected each other with their inner terminal ends. Urpores not included in the second epimeral margins. The inner margins of the posterior groups are as the Figure 23. The pedal segments being in Table 15

Table 14.

| Segments      | I  | II  | III | IV  | V  |
|---------------|----|-----|-----|-----|----|
| Extensor side | 14 | 108 | 63  | 148 | 45 |
| Flexor side   | 23 | 63  | 34  | 108 | 40 |

Table 15.

| Segments<br>Legs | 1  | 2  | 3   | 4   | 5   | 6   |
|------------------|----|----|-----|-----|-----|-----|
| I                | 34 | 57 | 80  | 91  | 108 | 103 |
| II               | 57 | 68 | 91  | 114 | 143 | 137 |
| III              | 51 | 57 | 80  | 120 | 137 | 125 |
| IV               | 80 | 85 | 120 | 165 | 182 | 177 |

(in  $\mu$ ).

The terminal spines of the sixth segments of fourth legs are  $128\mu$  long. Genital plate  $123\mu$  long and  $125\mu$  wide. Genital opening  $97\mu$  in length. Body colour light-brown in the specimen preserved in acetic glycerin solution.

*Female.* Almost same in body shape and organs as those of the male except body size and genital area. The genital supporter is very large, measuring  $100\mu$  in width. The measurements of the body and organs are as follows. Body  $825\mu$  long and  $675\mu$  wide. Interval between eyes  $255\mu$  in anterior pair. Maxillar organ  $180\mu$  long and  $130\mu$  wide. The palpal segments being in Table 16 (in  $\mu$ )

Table 16.

| Segments      | I  | II  | III | IV  | V  |
|---------------|----|-----|-----|-----|----|
| Extensor side | 25 | 114 | 72  | 156 | 46 |
| Flexor side   | 26 | 72  | 34  | 117 | 42 |

The pedal segments being in Table 17 (in  $\mu$ ).

Table 17.

| Segments<br>Legs | 1  | 2  | 3   | 4   | 5   | 6   |
|------------------|----|----|-----|-----|-----|-----|
| I                | 41 | 61 | 85  | 95  | 109 | 83  |
| II               | 48 | 75 | 102 | 129 | 143 | 120 |
| III              | 61 | 68 | 88  | 129 | 143 | 156 |
| IV               | 88 | 95 | 129 | 184 | 197 | 190 |

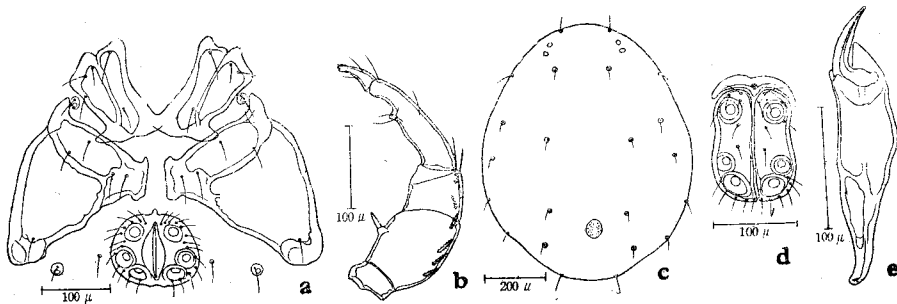


Fig. 6. *Limnesia tuberifera* Sokolow.

a. Epimera and genital plate of male. b. Right palpus of male. c. Dorsal view of female. d. Genital area of female. e. Mandible of male.

Terminal spines of the fourth legs  $102\mu$  long. Genital plate  $137\mu$  long and  $50\mu$  wide.

*Localities.* Captured by the author on the following dates: three males on Oct. 9, 1938 in a pond at Kashima-cho, Saga Prefecture; two males on Oct. 23, 1938 in a pool at Kimuro-mura, Fukuoka Prefecture; four males and five females on June 18, 1939 in a pond at Yamaguchi-cho, Saga Prefecture. The species was reported by Prof. Tohru Uchida in 1938 from Tokyo.

*Distribution.* Ussuri regions.

*Remarks.* The present species is somewhat different from *L. tuberifera* Sokolow of the Ussuri regions in palpi with feathered spines in the second segments and shorter fourth segments, but these variations seem not sufficient to build a new species.

**7. *Unionicola* (*Hexatax*) *crassipes* (O. F. Müll.) (Fig. 7)**

Specimen found from Saga Prefecture is somewhat different from the European species in

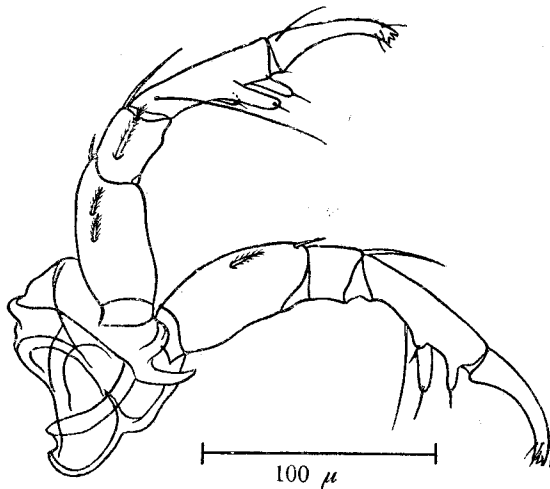


Fig. 7. Maxillar organ and palpi of *Unionicola* (*Hexatax*) *crassipes* (Müll.).

palpi, which have feathered spines in the second and third segments and are provided with a fine hair in the fourth segment as those of *U. (Pentax) affinis*. But the genital acetabula are six in each side. These variations seem not sufficient to make a new species.

*Locality.* One female was captured by the author on Oct. 9, 1938 in a pond at Kashima-cho, Saga Prefecture.

*Distribution.* Cosmopolitan.

8. *Arrenurus (Arrenurus) japonicus* Uchida & Imamura n.sp.

(Figs. 8, 9)

*Male.* Body  $1180\mu$  long, including petiolus,  $750\mu$  wide and  $675\mu$  high. Outline nearly round, having caudal appendages which are fairly long and posterolaterally stretched out. Antero-lateral margins moderately depressed close to the eyes. Dorsum well arched, with a pair of large lateral elevations outside the dorsal groove and a pair of large protuberances in the middle part, their crest being conically peaked bending a little forwards. Between the caudal appendages near postero-dorsal margin of the body are found two small protuberances and three small triangular elevations. The area enclosed by the dorsal groove is moderate in size and almost round in shape. Petiolus  $375\mu$  long, slightly stretched and thinned out in the distal portion, curved upwards. Lateral bristles shorter than petiolus. On the ventral side are found a pair of moderately large humps, each having a long hair on the summit, which are situated on both sides of the excretory pore opening a little posterior to the genital aperture. Interval between eyes  $330\mu$ . Maxillar organ  $190\mu$  long and  $106\mu$  wide. Mandibles  $190\mu$  long and  $72\mu$  high having a stout claw. Palpus also stout. The second segment of the palpus has seven large bristles. The third segment is provided with one bristle. The

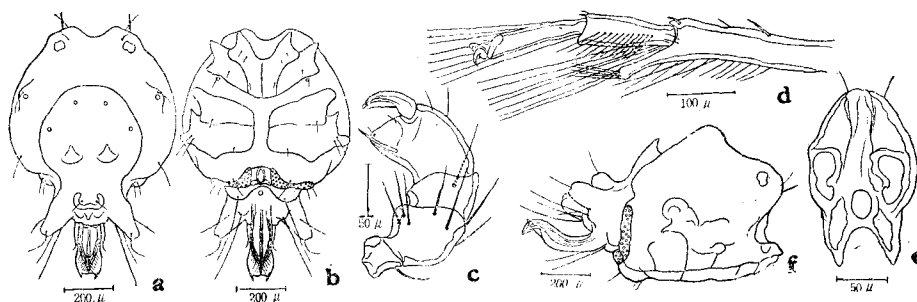


Fig. 8. Males of *Arrenurus (Arrenurus) japonicus* Uchida & Imamura n. sp.  
a. Dorsal view of body. b. Ventral view of body. c. Right palpus. d. Fourth to sixth segments of left leg. e. Maxillar organ. f. Side view of body.

fourth segment is the largest of all, having three bristles, one standing on the flexor side is very strong and movable. The fifth segment is claw-like bearing three minute hairs. The palpal segments being in Table 18 (in  $\mu$ ).

Table 18.

| Segments      | I  | II | III | IV | V  |
|---------------|----|----|-----|----|----|
| Extensor side | 27 | 72 | 65  | 95 | 53 |
| Flexor side   | 15 | 38 | 15  | 68 | 48 |

Epimera plates are moderately large, sharpened on their outer ends. The fourth segment of fourth legs is provided with a long spur measuring  $114\mu$  long, which bears five hairs on its distal end. The pedal segments being in Table 19 (in  $\mu$ ).

Table 19.

| Segments<br>Legs | 1   | 2   | 3   | 4   | 5   | 6   |
|------------------|-----|-----|-----|-----|-----|-----|
| I                | 76  | 84  | 125 | 160 | 144 | 232 |
| II               | 84  | 87  | 144 | 175 | 171 | 243 |
| III              | 103 | 110 | 148 | 186 | 179 | 228 |
| IV               | 137 | 198 | 213 | 255 | 129 | 152 |

Genital wings moderate in size, measuring  $170\mu$  in length, narrowing in the middle portion. They are completely separated from each other on both sides of the genital aperture. Genital opening  $63\mu$  long. Body colour bluish green. Eyes reddish black.

*Female.* Body almost globular in shape, narrowed anteriorly and  $1080\mu$  long and  $960\mu$  wide. Postero-lateral corner angulated characteristically and running to the posterior rounded margin. Dorsal groove approximately pyriform,  $690\mu$  in length and  $660\mu$  in width. Interval between eyes  $360\mu$ . Maxillar organ  $190\mu$  long and  $118\mu$  wide. Mandibles  $202\mu$  long including claws. The palpal segments being in Table 20 (in  $\mu$ ).

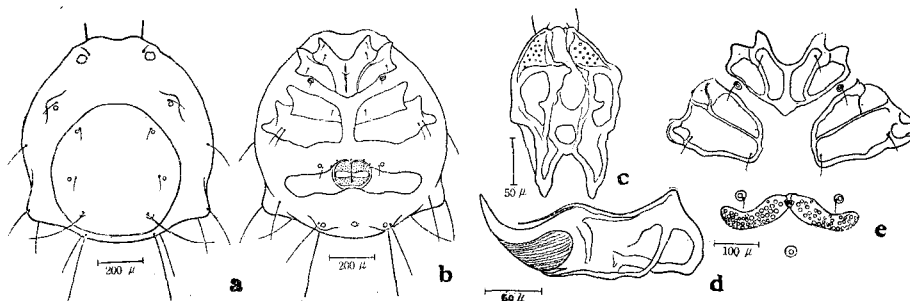
Table 20.

| Segments      | I  | II | III | IV  | V  |
|---------------|----|----|-----|-----|----|
| Extensor side | 38 | 80 | 68  | 106 | 57 |
| Flexor side   | 19 | 34 | 15  | 72  | 57 |

The pedal segments being in Table 21 (in  $\mu$ ).

Table 21.

| Segments<br>Legs | 1   | 2   | 3   | 4   | 5   | 6   |
|------------------|-----|-----|-----|-----|-----|-----|
| I                | 82  | 88  | 136 | 170 | 150 | 204 |
| II               | 82  | 90  | 143 | 197 | 177 | 218 |
| III              | 108 | 102 | 143 | 190 | 177 | 218 |
| IV               | 163 | 170 | 211 | 238 | 190 | 197 |

Fig. 9. *Arrenurus (Arrenurus) japonicus* Uchida & Imamura n. sp.

a. Dorsal view of female body. b. Ventral view of female body. c. Maxillar organ of female. d. Mandible of female. e. Epimera and provisional genital wings of nymph.

Genital opening  $122\mu$  long and  $170\mu$  wide. Genital wings  $245\mu$  long in the anterior margin slightly undulated.

*Nymph.* The measurements of the body in the largest specimen captured by the author are as follows. Body  $760\mu$  long and  $696\mu$  wide. Interval between eyes  $263\mu$ . Mandibles  $122\mu$  long and  $50\mu$  high. The palpal segments being in Table 22 (in  $\mu$ ).

Table 22.

| Segments      | I  | II | III | IV | V  |
|---------------|----|----|-----|----|----|
| Extensor side | 23 | 63 | 53  | 86 | 59 |
| Flexor side   | 13 | 23 | 13  | 50 | 53 |

The pedal segments being in Table 23 (in  $\mu$ ).

Genital wings curved posteriorly in the outer one-third the portion, measuring  $148\mu$  in length.

*Localities.* Three males, one female and five nymphs were captured by the author on June 18, 1939 in a pond at Yamaguchi-cho, Saga Prefecture. The

Table 23.

| Segments<br>Legs | 1  | 2  | 3  | 4   | 5   | 6   |
|------------------|----|----|----|-----|-----|-----|
| I                | 38 | 38 | 72 | 84  | 95  | 118 |
| II               | 42 | 49 | 76 | 95  | 106 | 139 |
| III              | 49 | 49 | 68 | 95  | 106 | 139 |
| IV               | 68 | 84 | 99 | 114 | 125 | 133 |

species was also collected by the author from Hokkaido, Hiroshima and Hyogo Prefectures and Nagoya City.

*Remarks.* The present species was provisionally reported by Dr. Tohru Uchida as a new species without description in 1938 from Tokyo. This species is characteristic in male of its petiolus in shape. Though the female is somewhat similar to *A. congener* (Daday) and *A. daubihensis* Sokolow, differs in body contour which is more globular than the species above reffered, and besides the genital wings are more slender than those of *A. daubihensis*. The description has been made in joint by the two authors.

#### 9. *Arrenurus (Arrenurus) latipetiolatus* Piersig (Fig. 10)

*Male.* Body  $1105\mu$  long and  $765\mu$  wide. The caudal lateral appendages are short and thick, with slightly concaved posterior margin. The dorsal groove is characteristic in the curve as shown in the Figure 10 and the encircled area measures  $460\mu$  wide in the widest portion. On the middle portion just anterior to the posterior margin on the dorsal side are found three conical elevations, the center of which is the largest. Interval between eyes  $375\mu$ . Maxillar organ  $186\mu$  long and  $105\mu$  wide. Mandibles  $186\mu$  long and  $76\mu$  high. The second segment of palpus is provided with seven hairs, two of which near the extensor terminal margin are feathered. The palpal segments being in Table 24 (in  $\mu$ ).

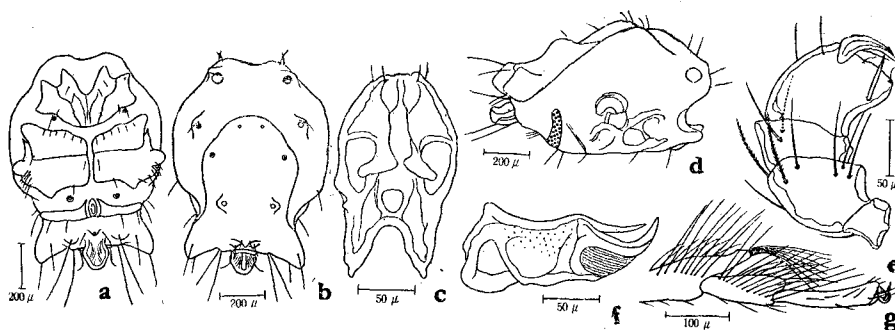
Table 24.

| Segments      | I  | II | III | IV | V  |
|---------------|----|----|-----|----|----|
| Extensor side | 34 | 76 | 57  | 87 | 53 |
| Flexor side   | 19 | 34 | 15  | 65 | 53 |

The spur of the fourth segment of fourth legs is  $82\mu$  long, having seven hairs equal in length on the tip. The pedal segments being in Table 25 (in  $\mu$ ). Petiolus oval in shape, short and compact, measuring  $163\mu$  long and  $129\mu$  wide in

Table 25.

| Segments |  | 1   | 2   | 3   | 4   | 5   | 6   |
|----------|--|-----|-----|-----|-----|-----|-----|
| Legs     |  |     |     |     |     |     |     |
| I        |  | 75  | 68  | 122 | 150 | 149 | 238 |
| II       |  | 80  | 95  | 129 | 177 | 177 | 265 |
| III      |  | 126 | 116 | 143 | 204 | 197 | 231 |
| IV       |  | 150 | 204 | 231 | 320 | 116 | 170 |

Fig. 10. Males of *Arrenurus* (*Arrenurus*) *latipetiolatus* Piersig.

a. Ventral view of body. b. Dorsal view of body. c. Maxillar organ. d. Side view of body. e. Left palpus. f. Mandible. g. Fourth to sixth segments of left leg.

the widest portion. Genital wings rather broad and  $210\mu$  in length. Genital opening  $48\mu$  long.

*Locality.* One male was captured on September, 1935 from Yatsushiro, Kumamoto Prefecture by Dr. I. Miyazaki. This is the first record of the species from this country.

*Distribution.* Bismarck Archipelagoes.

#### *Uchidacarus* n. subgen.<sup>1)</sup>

The subgenus belonging to the genus *Arrenurus* differs from the subgenus *Arrenurus* in the shape of the genital wings and in deficient in petiolus. The body shape is similar on the whole to that of the genus *Thoracophoracarus*, but is easily distinguished from the genus in having a dorsal groove. Though the new subgenus closely akin to the subgenus *Micruracarus* it lacks a petiolus, and the lateral caudal

1) The new subgenus has been named in honour of Dr. Tohru Uchida, the pioneer to the Hydracarinology in Japan.

appendages are distinct and apart each other. In the remaining characters the subgenus is well coincided with the subgenus *Arrenurus*. Only one male, a little deformed in the caudal portion of the body, was captured by the author in a pond at Yamaguchi-cho, Saga Prefecture.

*Type species.* *Arrenurus (Uchidacarus) sagaensis* Imamura.

10. *Arrenurus (Uchidacarus) sagaensis* n. subgen., n. sp.<sup>1)</sup> (Fig. 11)

*Male* (type, prep. 714). Body almost globular in shape,  $840\mu$  long,  $735\mu$  wide, having short caudal lateral appendages. Petiolus absent. Interval between eyes  $293\mu$ . Maxillar organ  $177\mu$  long and  $108\mu$  wide. Mandibles  $182\mu$  long and  $68\mu$  high. Palpi similar to those of the other species of the subgenus *Arrenurus*. The second segment of palpi is provided with six spines. The palpal segments being in Table 26 (in  $\mu$ ).

Table 26.

| Segments      | I  | II | III | IV | V  |
|---------------|----|----|-----|----|----|
| Extensor side | 33 | 73 | 63  | 86 | 56 |
| Flexor side   | 20 | 40 | 20  | 66 | 53 |

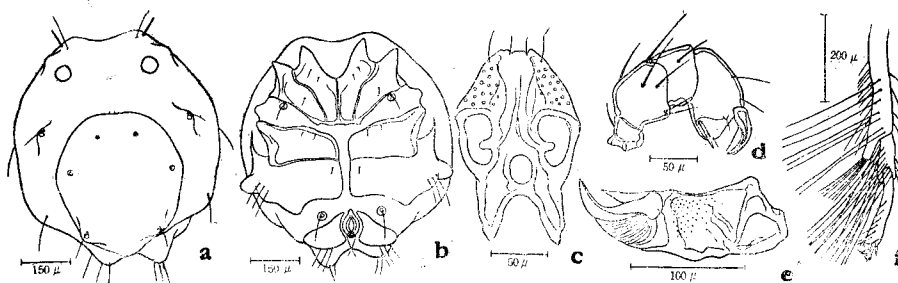


Fig. 11. Males of *Arrenurus (Uchidacarus) sagaensis* n. subgen., n. sp.  
a. Dorsal view of body. b. Ventral view of body. c. Maxillar organ. d. Left palpus.  
e. Mandible. f. Fourth to sixth segments of left leg.

The epimeral plates and legs belong to the type of the subgenus *Arrenurus*. The fourth segment of fourth leg has in the terminal end a spur, having six hairs on the tip. The pedal segments being in Table 27 (in  $\mu$ ). Genital wings short and broad, measuring  $132\mu$  in length. The genital opening is

1) The specific name refers to the locality where it was found.

Table 27.

| Segments | 1   | 2   | 3   | 4   | 5   | 6   |
|----------|-----|-----|-----|-----|-----|-----|
| Legs     |     |     |     |     |     |     |
| I        | 75  | 68  | 109 | 143 | 136 | 231 |
| II       | 82  | 82  | 122 | 163 | 163 | 258 |
| III      | 102 | 102 | 136 | 197 | 184 | 224 |
| IV       | 136 | 197 | 211 | 272 | 109 | 163 |

distinct, measuring  $46\mu$  in length.

*Locality.* One male was captured by the author on June 18, 1939 in a pond at Yamaguchi-cho, Saga Prefecture.

*Remarks.* The new water mite is distinctly different from any other species of the genus *Arrenurus*, having no petiolus, short broad genital wings and the caudal lateral appendages.

#### 11. *Arrenurus (Micruracarus) soochowensis* Marshall

*Localities.* Two males were captured by the author on Oct. 23, 1938 in a pool at Kimuro-mura, Fukuoka Prefecture. The present species were also collected from Hokkaido by the author.

*Distribution.* China, Manchuria and Ussuri regions.

#### Literature

- Daday, E. V. 1898. Mikroskopische Süßwasserthiere aus Ceylon. Természetr. Füzetek, Bd. 21, S. 85-117.
- Lundblad, O. 1947. Zur Kenntnis Australischer Wassermilben. Archiv für Zool. Bd. 40, A, S. 1-82.
- Masuda, Y. 1935. On the Life-history of a Fresh Water Mite, *Eylais* sp. (In Japanese). Bot. Zool. vol. 3, pp. 1460-1470.
- Miyazaki, I. 1935. On a Water Mite Parasitic on *Anopheles* (In Japanese). Bot. Zool. vol. 3, pp. 725-729.
- Piersig, R. 1904. Beiträge zur Kenntnis der Hydrachniden-Fauna des Bismark-Archipels. Arch. Naturg. Bd. 1, S. 1-34.
- Sokolow, I. 1931. Beiträge zur Kenntnis der Hydracarinena fauna des Ussuri Gebietes. I. Hydracarinena der stehenden Gewässer. Zool. Jahrb. Abt. Syst. Oekol. Geog. Bd. 61. S. 453-522.
- Uchida, Tohru 1931. Einige fernorientalische Arten der Wassermilben. Zool. Anz. Bd. 94, S. 129-138.
- Uchida, Tohru & I. Miyazaki 1935. Life-history of a Water-mite Parasitic on *Anopheles*. Proc. Imper. Acad. vol. 11, pp. 73-76.
- Uchida, Tohru 1937. Water Mites from Kyushu. Bull. Biog. Soc. Japan vol. 7, pp. 9-29.
- . 1938. Water Mites in the Environs of Tokyo. Fauna Musashinensis no. 2, pp.

1-3.

——. 1939. Water Mites in the Vicinity of Osaka. Volumen Jubil. Prof. Sadao Yoshida.  
pp. 449-451.

Viets, Karl 1923. Über einige Hydracarina von den Molukken. Zool. Anz. Bd. 57, S. 189-191.

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